Amendments to the Claims:

Please cancel claims 1-13, 15-30, 40, 50-71 and 74-78 without prejudice.

This listing of claims will replace all prior versions, and listings, of claims in the above-captioned application.

Listing of Claims:

Claims 1-30 (cancelled)

31. (currently amended) A method of sensing an analyte in a fluid comprising:

passing the fluid across a porous membrane disposed in an analyte detection device configured to capture the analyte on the porous membrane, wherein the analyte detection device comprises:

~~a body;~~

a porous membrane ~~coupled to the body~~;

a membrane support in contact with the membrane, wherein the membrane support is configured to maintain the membrane in a substantially planar orientation during use;

a top member positioned at a spaced distance above the porous membrane such that a first cavity is formed between the top member and the porous membrane,

wherein the top member covers at least a portion of the porous membrane, and wherein the top member is substantially transparent to light, and

a bottom member positioned below the porous membrane, wherein the bottom member is configured to receive fluid flowing through the porous membrane during use;

detecting an image of matter captured on the porous membrane; and

determining if the analyte is present on the porous membrane.

32. (original) The method of claim 31, further comprising passing the analyte to a sensor array if the image meets the user-defined criteria.

33. (original) The method of claim 31, wherein the sensor array comprises a porous particle.

34. (original) The method of claim 31, wherein determining if the analyte is present comprises comparing the shape of the matter to user-defined criteria.

35. (original) The method of claim 31, determining if the analyte is present comprises comparing the size of the matter to user-defined criteria.

36. (original) The method of claim 31, determining if the analyte is present comprises comparing the aggregate area of the matter to user-defined criteria.

37. (original) The method of claim 31, determining if the analyte is present comprises comparing the color of the matter to user-defined criteria.

38. (original) The method of claim 31, determining if the analyte is present comprises comparing the fluorescence of the matter to user-defined criteria.

39. (original) The method of claim 31, determining if the analyte is present comprises comparing the fluorescent intensity of the matter to user-defined criteria.

Claim 40 (cancelled)

41. (original) The method of claim 31, further comprising collecting a sample of an analyte in a fluid using an air collection device.

42. (original) The method of claim 31, further comprising passing a background fluid through the filter and detecting an image captured on the porous membrane prior to passing the fluid containing the analyte across the porous membrane.

43. (original) The method of claim 31, further comprising performing a lateral flush to clean the surface of the membrane prior to passing the fluid containing the analyte across the membrane.

44. (original) The method of claim 31, further comprising performing a back flush to clean the surface of the membrane prior to passing the fluid containing the analyte across the membrane.

45. (original) The method of claim 31, wherein detecting an image is performed using a CCD detector.

46. (original) The method of claim 31, wherein detecting an image is performed using a microscope.

47. (original) The method of claim 31, further comprising further comprising passing a visualization agent across the membrane after the fluid is passed over the membrane.

48. (original) The method of claim 31, further comprising performing a lateral wash of the membrane after detecting an image.

49. (original) The method of claim 31, further comprising performing a back wash of the membrane after detecting an image.

Claims 50-78 (cancelled)

79. (currently amended) A method of sensing an analyte in a fluid comprising:

passing a background fluid across a porous membrane disposed in an analyte detection device, wherein the analyte detection device comprises:

~~a body;~~

a porous membrane coupled ~~to the body~~;

a top member positioned at a spaced distance above the porous membrane such that a first cavity is formed between the top member and the porous membrane, wherein the top member covers at least a portion of the porous membrane, and wherein the top member is substantially transparent to light, and

a bottom member positioned below the porous membrane, wherein the bottom member is configured to receive fluid flowing through the porous membrane during use;

detecting an image of matter captured on the porous membrane after passing the background fluid through the porous membrane;

~~cleaning the surface of the porous membrane~~

removing at least a portion of the matter captured on the porous membrane;

passing a fluid containing one or more analytes across the porous membrane;
detecting an image of the matter captured on the porous membrane after passing the fluid containing one or more analytes through the membrane; and

determining if the analyte is present on the porous membrane by comparing the image of matter captured on the porous membrane after passing the fluid containing one or more analytes through the membrane to the image of matter captured on the porous membrane after passing the background fluid through the porous membrane.

80. (currently amended) A method of sensing an analyte in a fluid comprising:

passing a first sample fluid across a porous membrane disposed in an analyte detection device, wherein the analyte detection device comprises:

~~a body;~~

a porous membrane ~~coupled to the body~~;

a top member positioned at a spaced distance above the porous membrane such that a first cavity is formed between the top member and the porous membrane, wherein the top member covers at least a portion of the porous membrane, and wherein the top member is substantially transparent to light, and

a bottom member positioned below the porous membrane, wherein the bottom member is configured to receive fluid flowing through the porous membrane during use;

detecting an image of matter captured on the porous membrane after passing the first fluid sample through the porous membrane;

determining if an analyte is present in the first fluid sample;

~~cleaning the surface of the porous membrane~~

removing at least a portion of the matter captured on the porous membrane;

passing a second sample fluid across the porous membrane;

detecting an image of matter captured on the porous membrane after passing the second fluid sample through the membrane; and

determining if an analyte is present in the second fluid sample.